

## KENNY TREATMENT IN POLIOMYELITIS: AN EVALUATION\*

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THIS evaluation of the Kenny treatment is based on a study of 280 cases of poliomyelitis which occurred during the years 1942 and 1943. We are well aware that this report cannot be a final estimate of what the Kenny treatment has or has not done, because not a sufficient period of time has elapsed. However, we believe there is enough evidence from the progress made thus far to give us a fair basis from which to draw our conclusions.

With few exceptions, these cases were treated at the Los Angeles County Hospital during the acute stage of the disease, and were followed at other hospitals or as outpatients in one of the several clinics set up for follow-up care. This is not the total number of cases that entered the Contagious Disease Building of the Los Angeles County Hospital during 1942 and 1943, but represents 50 cases from the year 1942, and 230 cases from the year 1943, which we have been able to follow consistently.

Of this group there were 199 patients under 14 years of age, and 81 who were 14 or over, the average age being 11 years. The youngest was 4 months and the oldest, 43 years. The average stay in the hospital for the total group was 45 days. In the year 1942 there were 8 bulbar cases and 2 respirator; and in 1943 there were 8 bulbar and 3 respirator cases.

We found spasm to be present in one hundred per cent of the cases studied, which is in accordance with the findings of the Minneapolis group.<sup>1</sup> The spasm occurs most frequently in the neck, back, and hamstrings. It has become almost a dictum with us that if spasm is not present, one should be suspicious that the case is not that of infantile paralysis. In other words, spasm alone may occur without paralysis, or spasm may occur along with paralysis, but paralysis without spasm we have yet to see.

We can also state unequivocally that this spasm

of the muscles, with its associated pain and tenderness, was markedly relieved by the application of Kenny packs. And we agree with Steindler, et al,<sup>2</sup> that the majority of cases are relieved of their acute pain and tenderness within 48 to 72 hours.

### CLASSIFICATION OF CASES

In the evaluation of our end results, in the present study, we have placed more emphasis on the useful function of a limb to a patient than upon the muscle grade of that limb; for we have discovered that functional results under the Kenny system of treatment are dependent more upon early packing of muscle spasm, followed by proper muscle reëducation, than upon the degree of power that is present.

Table 1 gives a comparative study of the 280 cases in this series, divided as to their original involvement and showing the final disposition of the cases as to their function.

The five groups, according to the degree of original involvement, are as follows:

1. Extremely severe—extremities with complete paralysis, and severe bulbar and respirator cases.

2. Severe—Extremities in which the muscles were graded poor, traces, or zeros.

3. Moderately severe—Extremities in which the muscles were graded fair or poor.

4. Slight—Extremities in which the muscles were fair and above, with only slight weakness.

5. Normal—Extremities in which there was no weakness, or abortive or preparalytic poliomyelitis.

The amount of functional recovery is based on the following classification:

1. Normal—No paralysis, no residual weakness, or so slight as to be inconsequential. (All muscles good or normal.)

2. Excellent—No braces, crutches, or sticks. Muscle weakness present, but does not limit usefulness of extremity.

3. Good—No braces, but the patient uses crutches or sticks. The muscle weakness present does not require bracing.

4. Fair—Braces or other type of support required. Function is limited by contractures, or there is only a partial return of function of an extremity that was severely involved at the onset.

5. Zero or Poor—Function is nil. There has been slight or no return of power.

TABLE 1.—*Functional Results of 280 Cases of Poliomyelitis Treated by the Kenny Method*

This table gives a comparative study of the 280 cases divided as to their original involvement and final function, as explained in the text.

Degree of Original Involvement	No. Cases	Zero or Poor		Fair		Good		Excellent		Normal	
		No.	%	No.	%	No.	%	No.	%	No.	%
Extremely Severe .....	38	8	21	11	29	10	26	7	19	2	5
Severe .....	60			2	3	11	18	19	33	28	46
Moderately Severe .....	24					2	9	8	33	14	58
Slight .....	31							3	10	28	90
Normal .....	127							2	2	125	98
TOTAL .....	280	8	3	13	5	23	8	39	14	197	70

\* Read before the Section on Public Health, at the Seventy-second Annual Session of the California Medical Association, Los Angeles, May 2-3, 1943.

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Acknowledgment is made for the technical assistance of the physical therapy technicians in the above-named institutions.

## RESULTS AS TO FINAL FUNCTION

It will be noted on the Table that, of the 38 cases which were extremely severe in their original involvement, 50 per cent ended with good and above in their functional results. Of the 60 cases that were severe at the onset of the disease,—which means that all of them had extremities in which there were poor or trace muscles,—46 per cent had complete recovery, and 33 per cent, although showing muscle weakness, did not require crutches or sticks in their walking. There were 24 moderately severe cases, all of which had good or better end-results. There was 90 per cent normal recovery in the 31 cases that showed only slight weakness at the onset. Of the 127 abortive, or preparalytic cases, where only muscle spasm was present, only 2 per cent later showed definite muscle weakness.

Taking the cases as a whole, it is very interesting to note that 84 per cent had excellent or normal functional recovery. Only 5 per cent of the cases ended with fair, and 3 per cent with zero or poor function. The last two groups are those which required braces, or their function was impaired due to the lack of return of sufficient muscles to make a useful extremity, or due to tightness which limited function. Actually there were only 8 of the 280 cases on which braces were used, and 2 of these patients have had the braces removed.

This leaves 23 patients, or 8 per cent, who have brace-free extremities, but must have crutches or "Canadian sticks" in order to walk. A portion of these may eventually require some type of support which will place them in the "fair" functional group. However, we feel a good percentage will remain as good functional recoveries, with some of them finally being able to carry on normal activity without the use of their crutches or sticks in spite of residual weakness.

## SPASM AND SCOLIOSIS

Because Sister Kenny feels that spasm undetected or inadequately treated is the most damaging symptom of infantile paralysis, and that it is the cause of impaired function more than paralyzed muscles, the relationship of muscle spasm to scoliosis is very enlightening.

There are 41 out of the 280 cases who now have some degree of scoliosis. Nineteen, or 46 per cent of these 41 patients have had adequate care, and the spinal curvature is either stationary or improving. Twenty-two cases, or 54 per cent of the 41 have not had adequate care. This group had Kenny treatment during the contagious period, but packing or muscle reëducation was either discontinued or not followed long enough. This becomes more significant by noting that only 5 out of the 22 inadequately-treated cases had any muscles paralyzed at the onset. The remaining 17, or 80 per cent, were preparalytic or abortive poliomyelitis, and yet they developed scoliosis. All of the cases had spasm of the back muscles at the onset. This would seem to indicate that back spasm which is not adequately treated

is a potential cause of scoliosis, and it follows that adequate packing and muscle reëducation cannot be overemphasized in the prevention of curvature of the spine.

## SUMMARY

A study of the Kenny treatment in 280 cases of poliomyelitis occurring during the years 1942 and 1943 has been analyzed as to functional results as follows:

1. Eighty-four per cent ended with excellent or normal function requiring no support of any type.
2. Eight per cent ended with good function, that is, they required no braces, but used crutches or canes.
3. Five per cent ended with fair function, and three per cent with zero or poor function. These two groups required supports or braces, or function was impaired beyond hope of recovery.
4. Muscle spasm is more often the cause of poor function than is muscle paralysis.
5. Inadequate treatment of abortive poliomyelitis may often result in scoliosis.

## CONCLUSION

We have had our sense of values changed since the advent of the Kenny method. More emphasis is placed on spasm, its detection and treatment than upon caring for paralyzed muscles. This is rightly so, for we have many patients with weakened or completely paralyzed muscles, yet because there is no tightness or contracture they have excellent function.

The Kenny method of treating poliomyelitis has given us consistently good functional results. It is our opinion that with this method of treatment the development of contractures, and the need for bracing and other support is greatly reduced.

Boyle and Michigan.

## REFERENCES

1. Cole, W. H., and Knapp, M. E.: *The Kenny Treatment of Infantile Paralysis*, J.A.M.A., 116:2577-2580 (June 7), 1941.
2. Steindler, A. S., Russin, L. A., Sheplan, L., and Wolkin, V.: *Recent Changes in the Concept of the Treatment of Poliomyelitis*, *Archives of Physical Therapy*, 23:325-331 (June), 1942.

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("Free Enterprise." Concluded from Page 121)  
and our school districts. We must assume responsibility for direction of local affairs. We must analyze the proper function of local governments and we must make them more efficient and more responsive to the needs of the people. Above all we must quit running to Washington for help, because it becomes increasingly clear that if we continue to turn to the vast governmental machine in Washington for solution of problems which we ourselves should solve, all local responsibility and self-direction will ultimately be destroyed.

All organizations, business, civic and scientific, must ally themselves in the battle; they must join in a campaign of education which will inform the individual citizen of the dangers inherent in continued Federal encroachment.